REMARKS

Claims 1-19 are pending in the present application. Claims 1-19 are rejected. Claim 4 is herein canceled. Claims 1 and 5 are herein amended. No new matter has been entered.

Claim Rejections - 35 U.S.C. §112

Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claim 4 is herein canceled.

With respect to claim 5, Applicants note that the present specification describes that a tunnel oxide film (second insulating film) 15a embracing a chemical oxide film (first insulating film) 14 composed of a silicon oxide film is formed as shown in Figs. 3C and 3D. The tunnel oxide film (second insulating film) 15a is equivalent to the first silicon oxide film which is first formed on a semiconductor substrate 1, among the ONO film 15.

That is, the second insulating film corresponds to the tunnel oxide film 15a formed on the semiconductor substrate 1, among the ONO film 15.

Applicants herein amend claim 5 to clarify the above, and submit that the amendment and explanation overcome the rejection.

Claim Rejections - 35 U.S.C. §103(a)

Claims 1, 2, 3, 5, 6, 8, 11, 12, 14, 17 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wong (US Patent 5,423,944) in view of Dobuzinsky et al. (US Patent 5,412,246).

The Examiner concludes that it would have been obvious to combine the teachings of Wong and Dobuzinsky et al. in view of because the oxidizing agents such as nitric acid help remove defects (see Wong column 1 lines 20-25).

Claims 7, 9, 13, 15 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wong (US Patent 5,423,944) in view of Dobuzinsky et al. (US Patent 5,412,246) as applied to claim 3 above, and further in view of Muramatsu et al. (US Patent 6,468,841). The Examiner admits that Wong and Dobuzinsky fail to teach the use of nitric acid and an ozone containing solution. The Examiner notes that Muramatsu et al. disclose the use of nitric acid and an ozone containing solution at temperature of 420 °C (see column 10, lines 5-16). The Examiner concludes that it would have been obvious to combine the teachings of Wong and Dobuzinsky et al. in view of Muramatsu et al. because the oxidizing agents such as nitric acid help remove defects.

Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Wong in view of Dobuzinsky et al. The Examiner concludes that it would have been obvious to make an oxide film greater than one nanometer, because if the dielectric film were less than one nanometer it would lose its dielectric properties. The Examiner characterizes the different between the cited references and the claims as a recitation of relative dimensions of the claimed device, which would not perform differently than the prior art device. The Examiner concludes that the claimed device is not patentably distinct from the prior art device.

Claim 19 is rejected under 35 U.S.C. §103(a) as being unpatentable over Wong (US Patent 5,423,944) in view of Dobuzinsky et al. (US Patent 5,412,246).

The Examiner admits that Wong fails to disclose forming a second insulation film by low temperature processing after a fixed period of time. The Examiner asserts that since the Dobuzinsky et al. forms the nitride after the oxide is formed inherently there is a fixed period of time and the nitride is left for a fixed period (otherwise distinct layer of silicon oxide and silicon nitride would not have been formed as shown in Figure 59. The Examiner concludes that it would have been obvious to combine the teachings of Wong and Dobuzinsky et al. because the oxidizing agents such as nitric acid help remove defects (see Wong column 1 lines 20-25).

Applicants herein amend the claims to clarify the invention. Thereafter, Applicants respectfully disagree with the rejections, and submit that the claims are patentably distinguished over the cited combination of references.

Applicants note that the present invention has a feature of "forming a first insulation film by oxidizing a surface of a semiconductor substrate using a strongly acidic solution after cleaning the surface of said semiconductor substrate; and by performing a processing for the formation of a film of the same material as said first insulation film at low-temperature, forming a second insulation film of the same material as said first insulation film so that said second insulation film embraces said first insulation film", as recited in the amended claim 1.

Specifically, the chemical oxide film 14 corresponding to the first insulating film and the tunnel oxide film 15a corresponding to the second insulating film are shown in Figs. 3C and 3D. The chemical oxide film 14 is a silicon oxide film since it is formed by oxidizing the semiconductor substrate 1 composed of silicon (Si) using a strongly acidic solution. The tunnel oxide film 15a is composed of a silicon oxide film as described in line 7 on page 12 of the

present specification. Therefore, the chemical oxide film 14 and the tunnel oxide film 15a are made of the same material.

In the present specification, it is noted that the chemical oxide film 14 is formed as the first insulating film to have a film thickness of about 1.0 nm to 1.5 nm (Applicants note line 27 on page 9 to line 4 on page 10) , and the tunnel oxide film 15a embracing the chemical oxide film 14 is formed as the second insulating film to have a film thickness of about 7 nm by a processing at a low temperature (Applicants note lines 5-17 on page 12).

The Examiner asserts that claim 1 would have been obvious from the combination of the teachings of Wong and Dobuzinsky, since Wong discloses forming a first insulation film on the surface of a substrate by using an acidic solution and Dobuzinsky discloses the formation of a second insulation film using low temperature processing.

However, Applicants emphasize that Wong does not specify the component of a film corresponding to the first insulation film formed by using an acidic solution.

In addition, in Dobuzinsky, an oxide layer 39 shown in Fig. 5B, which is corresponding to the second insulation film formed by a processing at low temperature, is not formed based on insulation layer formed in advance on a substrate 30. That is, in Dobuzinsky, without forming a film corresponding to the first insulation film as in claim 1 of the present invention, the oxide layer 39 formed by a processing at low temperature is disposed on the substrate 30 directly. Accordingly, Dobuzinsky fails to disclose or suggest forming the second insulation film of the same material as the first insulation film so that the second insulation film embraces the first insulation film by a processing for the film formation at low temperature.

Therefore, even if one were to combine the cited references as asserted, the claimed invention would still not have been reached.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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